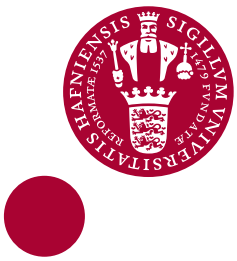

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Can friends be copied? Ethical aspects of cloning dogs as companion animals[1]

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ABSTRACT

Since the first successful attempt to clone a dog in 2005, dogs have been cloned by Somatic Cell Nuclear Transfer (SCNT) for a variety of purposes. One of these is to clone dogs as companion animals. In this paper we discuss some of the ethical implications that cloning companion dogs through SCNT encompasses, specifically in relation to human-dog relationships, but also regarding animal welfare and animal integrity. We argue that insofar as we understand the relationship with our companion dogs as one of friendship, the meaningfulness of cloning a companion dog is seriously questionable. Cloning may both disrupt the uniqueness of the relationship, as the shared history underlying the relationship can neither be repeated nor copied, and it may violate the meaning we attribute to friendship, as the notion of singularity inherent in our understanding of friendship is incompatible with the replaceability embedded in the practice of cloning. We further argue that the application of cloning technology to companion dogs can be interpreted as a violation of the integrity of dogs on at least two accounts: negative welfare implications associated with the cloning process, and the instrumentalisation of the dog inherent in cloning.

INTRODUCTION

Since the first successful attempt to clone a dog in 2005 (Lee et al. 2005) dogs have been cloned through Somatic Cell Nuclear Transfer (SCNT) for a variety of purposes. Examples of the opportunities generated by the technology include the cloning of elite service dogs such as drug-hounds, cancer-detecting dogs or dogs for aiding disabled people, strategies to preserve threatened canine species, and new approaches to research in human diseases and medicine (Lee 2014). Furthermore, with its promise to provide a genetic copy of a pre-existing animal, the technology has given rise to a new market: the service of cloning companion dogs. The market is not a big one, and commercial cloning of pet dogs is, to our knowledge, currently performed

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by only a couple of companies worldwide, requiring a sizable payment of around US $100.000 for the service.[2] However, the reportedly long waiting list at such companies suggests that the customer base may be growing.

There appears to be a growing interest in applying biotechnologies to companion animals in general. Miniature pigs, for instance, are pigs that are genetically modified to remain very small. While originally produced for research purposes, they have attracted increasing interest for use as companion animals due to appealing qualities like small size and 'cuteness', and are now commercially produced as such, to increase business (Cyranoski 2015). Another example is the GloFish, which is an ornamental fish genetically modified to glow in a variety of bright colours, and marketed as an entertaining and decorative addition to the home.[3]

The application of biotechnologies such as genetic modification and cloning to companion animals gives rise to a range of ethical issues. In this paper we focus exclusively on the cloning of companion dogs. Although the discussion is also relevant to other animals held as companion animals, such as horses and cats, we have chosen this focus as the relationship between dog and owner is often seen as the paradigmatic example of friendship between humans and animals, captured in the phrase 'Man's best friend'. We will discuss some of the ethical implications entailed by cloning companion dogs by SCNT, specifically in relation to the following three concerns: 1) *Welfare issues relating to the surrogate mother and the clone*. The technology of SCNT has not yet been perfected, and has severe implications for many of the animals involved in terms of suffering and diminished welfare. 2) *Mortality rates and possible violation of the integrity of the cloned dog and the clone*. Cloning technology entails a degree of power over the reproductive context of the animals not previously achieved. It allows us to produce an almost genotypical replicate of an animal for the purpose of creating a phenotypical copy of the original animal. The ethical issues in this area concern whether the mortality rates are ethically problematic, whether cloning can be said to infringe on or violate the integrity of the animals involved, and whether the view of animals embedded in the desire to clone them as companion animals is ethically acceptable. 3) *The human-dog relationship*. The paradigm relationship between human and companion dog often involves affection, emotional attachment, and a long-term commitment, and the application of cloning technology to dogs prompts considerations of whether cloning is a meaningful expression of this relationship, or if it somehow violates the nature of the purported human-dog friendship.

We begin by describing the technology of animal cloning and welfare issues typically attached to it. We then analyse the ethical issues related to increased mortality rates and the question of whether cloning is a violation of the animal's integrity. Finally, we analyse the relationship between humans and companion dogs through an understanding of this relationship as an expression of human-animal friendship, and discuss the specific ethical concerns that cloning of dogs gives rise to in such a perspective.

1 WELFARE ISSUES

1.1 Cloning technologies

The technology of somatic cell nuclear transfer was first successfully applied to a mammal by Dr. Ian Wilmut's group in 1996 to produce the sheep Dolly (Wilmut et al. 1997). Since then, the technology, with

2 Sooam Biotech in South Korea, and ViaGen Pets in Texas, USA.
3 See the GloFish webshop: www.glofish.com

certain moderations, has been used to clone a variety of animals, including mice, rats, cats, dogs, cattle, horses, and camels (Verma and Arora 2015). The basic technology consists of removing the nucleus from an unfertilised egg cell (female gamete) of the species to be cloned and replacing it with a somatic cell nucleus from e.g. a muscle cell from the animal to be cloned. The egg can now be manipulated into acting like a fertilised egg which, when developed into a blastocyst, can be transferred to the womb of a host animal where the blastocyst can develop to term (Vajta and Gjerris 2006).

The resulting animal will thus be an almost exact genotypical copy of the animal from which the original somatic cell nucleus was taken, albeit there will be minor differences due to the mitochondrial DNA left in the donor egg cell used in the process. The importance of this is still unclear but at least some of the reasons for the low success rates and welfare problems connected to cloned animals have been attributed to this (St. John 2014). Moreover, epigenetic factors influencing the original animal and the clone can account for the phenotypical differences often observed between the original animal and the clone (Heegaard 2013). The latter is particularly important here, as it questions the possibility of resemblance in looks and behaviour between the original companion dog and a later clone, which in turn might influence the perception of the cloned individual as well as the relationship between owner and dog. We shall return to this below (see section 4).

1.2 Mortality rates and impaired welfare

The science of cloning is a relatively new one, and still has significant shortcomings. Success rates are dependent on the species but are generally low, associated with increased mortality at all stages of development (Ross and Feltrin 2014) and increased welfare problems for viable animals (Hill 2014). The success rates in canine cloning vary greatly and depend on a wide range of factors, such as breed, donor cell type, and method of cloning. They are, however, currently very low with the most successful lying on around 4%, meaning that around 4% of the oocytes transferred to surrogate mothers will develop into pups (Lee 2014). The low success rates are closely related to the significant health and welfare problems for the animals involved. The data regarding health and welfare issues specifically pertaining to the cloning of dogs is very limited, but experience from other animals, primarily cattle and pigs, shows that many of the animals involved - mostly the surrogate mothers and the clones - suffer from a wide range of problems.

In general, surrogate mothers experience pregnancy failures and gestational issues associated with carrying cloned foetuses, as well as increased rates of abortion, excess foetal size, dystocia, hydrops, placental abnormalities, and consequential Caesarean sections. The rate of embryo survival is therefore very low. These difficulties are likely to involve suffering, anxiety and distress for the animal, and in addition may affect the future fertility of the female (EFSA 2008).

Experience from a range of species indicates that around half of the clones surviving the gestation period die during birth or within the first months of life (EFSA 2008; The Danish Animal Ethics Council 2016). The cloned animals are at high risk of suffering from developmental abnormalities such as reduced birth weight, partially undeveloped or enlarged organs, deformities, respiratory failure, increased susceptibility to disease, reluctance to suckle, and difficulty in breathing and standing. Although these problems can also happen in natural births, they occur with a higher frequency in cloned offspring, contributing to the low rates of animals surviving into adulthood (The Danish Animal Ethics Council 2016). Having survived the first months, however, the cloned animals seem to develop normally, with no unique health risks; growth,

lifespan, and reproductive capabilities appear similar to animals that are not cloned.[4] Nor have any problems been recorded with the offspring of clones (EFSA 2012).

It should be noted that according to Directive 2010/63/EU on the use of animals in research, animal foetuses are considered objects of legal concern from the last trimester of pregnancy, i.e. their welfare matters. Although cloning performed in breeding does not fall under this legislation, it shows that foetuses undergoing the same procedure would, if part of a research project, have been considered as beings with individual welfare, and hence the process requires the legal performance of ethical evaluation and approval.

From an animal welfare perspective, it can be argued that the high mortality rates are unproblematic to the extent that they do not lead to negative mental states in the foetuses or surrogate moms. From other ethical perspectives, however, there are broader ethical issues than welfare, such as keeping companion animals at all, loss of animal lives, and animal integrity. The latter two will be discussed in the next section.

2 DEATH AND INTEGRITY

2.1 Is death an animal ethics issue?

From a common-sense point of view, causing the death of another sentient being is an ethical issue. To take such a life is prima facie wrong, but can, depending on the ethical perspective, be more or less justified. Since the very beginning of the animal ethics debate philosophers have argued that animals have the right to their own life, owing to both certain capacities (sentience or rationality) and to the extent that taking an animal life has an adverse influence on certain human qualities or virtues deemed desirable to promote (e.g. tenderness, unselfishness) (Walters and Portmess 1999). Theologians have added animals' closeness to God as an argument, stating that since humans did not create animals, we have no right to kill them (Preece 2002). However, the more dominant view has been that humans are the crown of creation and - transformed into philosophical argumentation that stresses human superiority typically based on human rationality - this has been understood as legitimising the killing of animals. From a consequentialist perspective (e.g. Jeremy Bentham or Peter Singer) death in itself is ethically irrelevant, since a dead being has no interests. Rather, what matters is how the being perceives its situation while alive, and what a sentient being having a 'good life' contributes with to the calculation of overall consequences. If euthanised or dead, the animal has neither good nor bad experiences to add to the overall calculation of best possible outcome in terms of overall happiness or preference satisfaction – and the death of the animal is therefore ethically neutral (Singer 2011).

If, on the other hand, the being *as such* matters, and not merely its experiences, causing death is relevant as it denies the continuation of this very being. Tom Regan, often regarded as the most influential modern philosopher in the defence of (certain) animals' right to their lives, argued that so-called *subjects of a life* are entitled not only to be alive, but also to a decent life without instrumentalisation, i.e. not to be held or used for the sake of another's purpose (Regan 1984).

From a virtue ethics point of view, another issue comes to the fore. The ethical justification of an act is no longer linked to the criteria for the action (maximising overall good or respecting rights) but to the question of which virtues the actor should express in the situation to build a flourishing life by developing and employing virtues such as justice, courage and humbleness. Furthermore, it is not the moral status of the

4 However, some studies seem to indicate increased mortality in adult clones as compared to sexually reproduced animals (EFSA 2008).

object of concern (here the animal) that is of primary interest, but rather how the morally responsible agent decides to act towards it. Hence, although the context sensitivity of this approach opens the way for a variety of correct actions, in order to justify killing animals one needs to show how this can be an expression of the right virtues towards animals. It may be courageous to kill an aggressive wolf, but it can be just as much a lack of righteousness if the wolf is stressed due to hunger caused by urbanisation and deprivation of its natural habitat.

2.2 Integrity as wholeness and uniqueness

In line with the reasons given above to consider causing animal death an ethical issue, philosophers like Bart Rutgers and Robert Heeger have argued in favour of the concept of animal integrity. They define integrity as "wholeness and intactness of the animal and its species-specific balance, as well as the capacity to sustain itself in an environment suitable to the species" (Rutgers and Heeger 1999). The general idea behind this concept is thus to respect the animal as such in its 'being itself', in order to e.g. protect it from breeding schemes aimed at adopting its genetic traits to barren housing conditions (Olsson, Gamborg and Sandøe 2006). An animal's integrity is respected when kept in an environment and social context where it may practise species-specific behaviour and live a life without external disturbance of its 'normal' physical processes. The cloning process can thus be questioned from an integrity perspective. The embryo, the 'being to come', would develop into another being without human interaction, and the change to this 'potential original' being can be regarded as a violation of its integrity. For a more elaborate discussion of the meaning of animal integrity, please see Röcklinsberg et al. 2014.

The concept of animal integrity has been included in animal legislation in several countries (CH, NL) in the context of biotechnology in order to create a zone for additional ethical reflection on the genetic modification of animals (Rippe 2011). Further, in line with the idea of flourishing, Martha Nussbaum points out that an animal is a wonderful and awe-inspiring complex life form that we cannot create from scratch, but which rather may inspire us to see its completeness and interconnectedness with other beings (Nussbaum 2006). That is, integrity is acknowledged as a 'zone of untouchableness' reflecting the independent existence of the animal. Hence, excluding the concept of integrity (or similar, such as dignity, intrinsic value) from ethical deliberations basically limits the possibility to take aspects other than welfare into consideration in animal ethics. Based on this, we argue that, albeit proven difficult to implement in legislation, integrity is a useful ethical concept mirroring a common human experience of animals being other beings-in-flesh to whom we can relate (Merleau-Ponty 1969).

Given that an animal has integrity, understood in this way, it is relevant to reflect on what may be regarded as violation of this integrity, and whether violating it is ethically justifiable in certain situations. With regard to the first issue, we argue that the above-mentioned welfare implications of cloning constitute a violation of the animal's integrity, similar to a situation where poor housing conditions lead to limitations in fulfilling species-specific needs. Such treatment of an animal implies a lack of respect for its wholeness, and its 'zone of untouchableness' is transgressed. Further, the cloning process (as other reproductive technologies) itself can be seen as violating the animal's integrity by reducing the uniqueness and random nature of the animal´s genome to serve human purposes of no relevance to the animal. The process thus instrumentalises the animal from the very outset and reduces it to an artefact whose value is strictly limited to its properties. Finally, if infringement in the reproduction process is seen as violating the integrity of an individual, then not only is the clone's integrity violated but also that of the surrogate mother and the female dog 'donating' her eggs.

The discussions above can be said to have a general bearing on the evaluation of many kinds of animal cloning. In the following we will analyse more specifically what cloning technology brings to the special relation between humans and dogs

3 THE HUMAN-DOG RELATIONSHIP

3.1 Why are we so attached to our dogs? An empirical perspective

How and why people become emotionally attached to their dogs is a complex matter, and the relationship, the associated love, friendship, or bond between humans and dogs can be approached from different angles, e.g. philosophical and psychological. When questioning the relationship as such, the aspects raised also depend on whether we look at it from the human's point of view or try to see it from the dog's perspective. However, if we approach the discussion empirically from the voice of the human, we can gain insight into the distinctiveness of different kinds of relationships between human and dog, and what it is about the dog that elicits particular attachments between humans and dogs.

The concept of attachment was originally used to conceptualise child-parent relationships (e.g. Ainsworth et al. 1978), but attachment theories have expanded in scope to include adult relationships, relationships with friends and family members, and they also work as useful frameworks for exploring the human-companion animal relation (e.g. Beck and Madresh 2015). That humans often view the relationship with their dogs as similar to those with friends, family members, or children is widely accepted in research on human-animal relations (Archer 1997; Greenebaum 2004; Hens 2008), and comparing relationships with dogs to relationships with human intimates is common in everyday references (e.g. 'my best friend', 'my baby', 'my darling'). Of course, different people have different relationships with their dogs, and the roles dogs play in people's lives vary and likely depend on a range of cultural and socio-demographic factors as well as the characteristics of the individual dog. However, the dog is sometimes reduced to a mere status symbol – to a means of displaying elite status, to a vocation – e.g. breeding and ownership for showing/exhibiting, or to equipment – e.g. used for hunting, therapeutic purposes, protection of property or other animals etc. (Hirschman 1994).

On the other hand, when humans view their dogs as companions, friends, partners, or children, intimate and emotional relations occur, occasionally to a level where the dog is seen as essentially human and a full substitute for the company of a human being (Belk 1996). Sometimes dogs rank even higher than humans in terms of specific social or relational provisions, e.g. reliable alliance, nurturance, and companionship (Bonas, McNicholas, and Collins 2000; cited in Serpell 2002). Many people mourn their dogs when they die (Wrobel 2003; Chur-Hansen 2010), sometimes to such an extent that a 'replacement' can never be envisaged, either because the owner believes that the dog is irreplaceable as an individual being or because the owner could not go through such grief again (Belk 1996). Some people also believe that their dog possesses specific attributes that match the owner's ideal expectations of love and attachment: the tendency to be very affectionate, to welcome the owner intensely whenever he or she returns home, to be highly expressive, and to attend closely to everything the owner says or does (Serpell 1996).

Care-giving can be seen as a specific part of the explanation for why people are emotionally attached to their dogs (Archer 1997; Mosteller 2008; Julius et al. 2013), and training and caring for dogs as well as feeling guilt or pride in their behaviour have parallels to raising a child (Belk 1996). In sum, there are several similarities between the owner-dog relationships which humans establish and reinforce, and relationships between people. Furthermore, people seem to be attracted and attached to features of the dog and of the owner-dog relationship that are essentially human.

3.2 An Aristotelian perspective on friendship

According to Aristotle (384 - 322 BC) a true friendship is characterised by equality of power and status, a genuine desire for the good of the other for the other's own sake, and mutual recognition and reciprocation of the other's goodwill (Aristotle 2000). True friendship, moreover, cannot be based upon any benefits that may be derived from it. If you befriend another for the sake of gaining something, say pleasure or utility, the friendship is not a true one in the Aristotelian sense.

The requirement for equality in Aristotle's account of friendship leaves much wanting if we seek to understand the relationship between humans and dogs as 'friendships'. Most human-dog relationships are characterised by a significant asymmetry of power and dependence. Even in the designation of the human as the dog-*owner*, there seems to be a disparity that prevents any comparison between human friendships and the relationship between humans and dogs: we do not buy our human friends, we do not own them, and we do not check their pedigrees for hereditary diseases before we befriend them. Dogs depend on their owners; on our goodwill, commitment, and insight to a degree that our friends normally do not. And a dog has no possibility of leaving us if we fail or hurt them, as friends are free to do.

The element of reciprocity is equally deficient. In a relationship between human and dog, where the dog is seen as a companion (friend) more than as an instrument to achieve certain human goals (hunting, shepherding, breeding etc.), dog-owners are generally expected to provide a caring home for their dog, offer proper daily care and veterinary treatment if needed. The dog, on the other hand, is not expected to do anything other than keep within the confines of what is seen as being well-behaved and, through this, to bring joy and companionship into the lives of humans in a variety of ways. The dog cannot be expected to desire happiness for you, to put aside its own wants and whims for your pleasure, or to assume responsibility for your welfare, even though many dog-owners experience the dog reacting to their emotional states (see below). While dog-owners have both legal and moral responsibility for their dog, the dog cannot be held morally accountable for its conduct. It is not a ‘bad dog’ in a moral sense when it barks out of excitement or anger; it merely exhibits its natural behaviour. Thus the relationship between human and dog will inevitably lack reciprocity in relation to both behaviour and to moral responsibility.

From an Aristotelian viewpoint, then, a relationship between a dog and its owner can hardly be called friendship. The relationship differs too much in vital respects. However, although reciprocity and equality certainly are important characteristics in our everyday understanding of friendship, there is one aspect that is perhaps even more central to it, as also discussed by Aristotle: the notion of singularity. In a true friendship, according to Aristotle, you love the other for the very person she is and has been during your friendship, and not only for the qualities she possesses. If you love someone merely for her qualities, if she is useful or pleasant to you, for instance, you ultimately love her for your own sake, not for hers, and your love would be contingent upon her continuing to be useful or pleasant (Aristotle 2000). As Thomas Hurka has also remarked, certain qualities are likely to be the traits that attract you to a person in the first place, but once a

friendship has developed, your love is no longer directed towards the qualities only, but primarily to the individual she is and has been during the time you have known each other (Hurka 2013). Were you to find someone who has your friend's qualities to a greater degree, you would not simply replace your friend with the new one. A friend can alter or lose some of her qualities over time, or gain new ones, while your friendship remains intact. The reason, Hurka argues, is that to love a person for the person she is, is partly to love her for her *historical* qualities, which means her having participated with you in a shared past, a past that no one else can have (Hurka 2013). Your shared history, then, represents the singularity of your friendship. A person with identical qualities cannot replace your friend, because she *is* not your friend; you have no shared history. When viewing a friend as singular, as a particular individual, and not as a specimen, the friend is by definition irreplaceable.

Although dogs are not friends in many aspects of the Aristotelian sense of friendship, the analogy that appears in light of the notion of singularity is quite clear. The relationship you have with your dog is a relationship with a particular dog. For most dog-owners, preferring your dog to another dog, even if the other dog is better behaved, or not as annoyingly energetic as yours, is meaningful. After all, the other dog is not *your* dog: it is not the dog with whom you have a history and a present relation. The significant analogies between human-dog relationships and friendships, we will argue, can help illuminate some important ethical issues when cloning companion dogs.

4: ETHICAL ASPECTS OF CLONING A FRIEND

The cloning of animals in general raises a number of ethical issues, as shown above. Due to the special relation between humans and dogs, cloning dogs as companion animals fosters additional concerns. Here we will focus on how the understanding of this relationship as a kind of friendship can be disrupted by the technology.

First of all, the *uniqueness* of the relationship seems to be disrupted. Recall the notion of singularity in friendships, and the shared history that underlies it. Even if it was possible to identify all the qualities of a certain friend that elicit your love and affection for her, you could not simply replace your friend with a person that has the same qualities. You could not even replace her with a genetic copy of herself, because the relevant 'self' of your friend lies in the person that has emerged from your particular history together. A friendship is built upon, and nurtured by, a history that friends share with each other, and that history, by its very nature, cannot be repeated with any other being.

If the purpose of cloning your dog is to obtain a new dog that bears as close a resemblance to the original as possible, it assumes that the history shared is unimportant to the relationship. Instead of beginning a new friendship with a new dog, it is sought to continue or repeat something that has already happened and ended. If this is possible, the truth of the idea that dogs are unique must be questioned. If the same relationship can be continued with a new individual, it is hard to see that there was ever an individual, but rather a specimen of a species that could be exchanged with another specimen in much the same way a broken dishwasher can be replaced with a new one of the same model. If that is possible, then it seems hard to claim that dogs are individuals with which humans can have meaningful relationships, much less relationships resembling friendships – thus also questioning why it makes sense to clone the original dog in the first place, given that it could be replaced with any similar dog.

Do people who decide to clone their dog not truly love their dog then? Or do they love something *about* their dog more than they love the dog *itself*? Our point is that we must consider what sort of relationship we want to have with our dogs. Insofar as we view dogs as individuals, the question becomes whether cloning is the right way to treat an individual that is considered a friend. If friends are singular beings, and the notion of singularity is incompatible with the notion of replaceability, cloning a friend seems to violate the very meaning we attribute to friendship. Consider also the points on animal integrity mentioned above: the process of cloning reduces the dog to an artefact that should have certain properties, depending on the wishes of the human, and the dog is effectively treated as a being that first and foremost must fulfil those wishes. With regard to the original dog, therefore, one can question whether it is an appropriate way of showing compassion and respect to seek to copy that individual instead of honouring the uniqueness of this particular individual and relationship through grieving and memories. With regard to the new dog, one must question whether a sound relationship can be built when the human part of it expects the new individual to take the place of a former individual instead of being given a chance to carve out a new relationship. Obviously, there is also a risk that the clone will be a disappointment to the owner, since it will not be an exact copy of the original due to the epigenetic factors that also influence who we become, be it man or dog. The expectations linked to the clone being a clone of a previous friend may hinder more than facilitate a new friendship, and the relationship may be coloured by disappointment and frustration. Cloning a companion dog, then, seems to effectively prevent both the new and the original dog from being part of a relationship of friendship in any meaningful sense of the term.

To some, a further ethical issue is the number of dogs lost from embryos that do not develop into individuals and those that, considering the imperfections of the technology, will be lost during birth or shortly after, in an attempt to secure a healthy clone of the original dog. Each of these would represent a potential replacement of the original friend that has either never developed into a sentient being or has died early, sometimes involving suffering. Would this be a way to honour the friendship once enjoyed? Or would it be an expression of putting one´s own needs before the other party in a friendship, to such a degree that the death and/or suffering of one´s friend would be subjugated to one's own desires? The latter is not typically seen as an integral part of a relationship based on friendship.

Based on this, it is hard to see how cloning a dog that is considered a friend can ever function. The very process of cloning turns the dog into an instrument to satisfy human needs. Not only is this problematic from an animal ethics point of view, but it seems to bear within it a contradiction of the very relationship sought to be re-established with the clone. Even though dogs may be cloned, then, it seems that friends may not.

5: CONCLUSIONS

In this paper, we have discussed some of the ethical issues related to the cloning of companion dogs, specifically those concerning animal welfare, animal integrity, and the human-dog relationship. We have argued that the application of cloning technology to companion dogs can be interpreted as a violation of the dogs' integrity on at least two accounts: the negative welfare implications associated with the cloning process, and the instrumentalisation of the dog inherent in cloning, essentially reducing the dog to the purpose of serving human interests. Cloning companion dogs can therefore be seen as a denial of the animals' intrinsic value.

We further argue that the relationship between human and dog is susceptible to alterations if cloning is introduced as an element of the relationship. Cloning may both disrupt the uniqueness of the relationship, as the shared history underlying the relationship can neither be repeated nor copied, and may violate the meaning we attribute to friendship, as the notion of singularity inherent in our understanding of friendship is incompatible with the replaceability required by the practice of cloning. Insofar as we understand the relationships with our companion dogs as ones of friendship, then the meaningfulness of and ethical values underlying cloning a companion dog are open to serious questioning.

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